

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions of the claims in the Application. With reference to the listing it is noted that, herewith, claim 17 is amended. No new matter has been added.

Listing of Claims

Claim 1 (Canceled)

2. (Withdrawn) An AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to said electronic apparatus, comprising:

 a first constant-current control device which performs first constant-current control for charging said battery;

 a second constant-current control device which performs second constant-current control for supplying an electric current necessary to drive said electronic apparatus;

 a voltage detecting device which detects a voltage drop of the DC output; and

 an internal temperature detecting device which detects an internal temperature,

 wherein if the internal temperature becomes higher than a preset value, the DC output is shut down or the first constant-current control for charging said battery is performed.

3. (Withdrawn) An AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to said electronic apparatus, comprising:

a first constant-current control device which performs first constant-current control for charging said battery;

a second constant-current control device which performs second constant-current control for supplying an electric current necessary to drive said electronic apparatus;

a voltage detecting device which detects a voltage drop of the DC output; and

a timer device which starts when detecting the electric current necessary to drive said electronic apparatus,

wherein if the constant-current control for supplying the electric current necessary to drive said electronic apparatus continues for not less than a preset time, the DC output is shut down or the first constant-current control for charging said battery is performed.

4. (Withdrawn) The AC adaptor according to claim 2, further comprising a display device, wherein said display device displays switching from the constant-current control for supplying the electric current necessary to drive said electronic apparatus to the shutting down the DC output, or the constant-current control for charging said battery is performed.

5. (Withdrawn) The AC adaptor according to claim 3, further comprising a display device, wherein said display device displays switching from the constant-current control for supplying the electric current necessary to drive said electronic apparatus to the state that the DC output is shut down or the constant-current control for charging said battery is performed.

Claim 6 (Canceled)

7. (Withdrawn) An electric current control method for an AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to the electronic apparatus, comprising:

- a first constant-current control step of performing first constant-current control for charging the battery;

- a second constant-current control step of performing second constant-current control for supplying an electric current necessary to drive the electronic apparatus;

- a voltage detection step of detecting a voltage drop of the DC output; and

- an internal temperature detection step of detecting an internal temperature,

wherein if the internal temperature becomes higher than a preset value, a step of shutting down the DC output, or the step of first constant-current control for charging the battery is performed.

8. (Withdrawn) An electric current control method for an AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to the electronic apparatus, comprising:

- a first constant-current control step of performing first constant-current control for charging the battery;

- a second constant-current control step of performing second constant-current control for supplying an electric current necessary to drive the electronic apparatus;

- a voltage detection step of detecting a voltage drop of the DC output; and

a timer step which starts when detecting the electric current necessary to drive the electronic apparatus,

wherein if the constant-current control step of supplying the electric current necessary to drive the electronic apparatus continues for not less than a preset time, a step of shutting down the DC output, or the first constant-current control step of charging the battery is performed.

9. (Withdrawn) The method according to claim 7, further comprising a display step, wherein in the display step, switching from the constant-current control for supplying the electric current necessary to drive the electronic apparatus to the shutting down the DC output, or the constant-current control for charging said battery is displayed.

10. (Withdrawn) The method according to claim 8, further comprising a display step, wherein in the display step, switching from the constant-current control for supplying the electric current necessary to drive the electronic apparatus to the shutting down the DC output, or the constant-current control for charging said battery is displayed.

11. (Withdrawn) A computer program for allowing a computer to execute an electric current control method for an AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to the electronic apparatus, comprising:

a first constant-current control step of performing first constant-current control for charging the battery;

a second constant-current control step of performing second constant-current control for

supplying an electric current necessary to drive the electronic apparatus; and

- a voltage detection step of detecting a voltage drop of the DC output,
- wherein if the output voltage becomes lower than a preset value, the second constant-current control step of supplying the electric current necessary to drive the electronic apparatus is performed.

12. (Withdrawn) A computer program for allowing a computer to execute an electric current control method for an AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to charge a battery connected to the electronic apparatus, comprising:

- a first constant-current control step of performing first constant-current control for charging the battery;
- a second constant-current control step of performing second constant-current control for supplying an electric current necessary to drive the electronic apparatus;
- a voltage detection step of detecting a voltage drop of the DC output; and
- an internal temperature detection step of detecting an internal temperature,
- wherein if the internal temperature becomes higher than a preset value, a step of shutting down the DC output, or the step of first constant-current control for charging the battery is performed.

13. (Withdrawn) A computer program for allowing a computer to execute an electric current control method for an AC adaptor separated from an electronic apparatus, and having a DC output unit which performs outputting under constant-voltage/constant-current control in order to

charge a battery connected to the electronic apparatus, comprising:

a first constant-current control step of performing first constant-current control for charging the battery;

a second constant-current control step of performing second constant-current control for supplying an electric current necessary to drive the electronic apparatus;

a voltage detection step of detecting a voltage drop of the DC output; and

a timer step which starts when detecting the electric current necessary to drive the electronic apparatus,

wherein if the constant-current control step of supplying the electric current necessary to drive the electronic apparatus continues for not less than a preset time, a step of shutting down the DC output, or the step of first constant-current control for charging the battery is performed.

14. (Withdrawn) A computer-readable recording medium characterized by recording computer programs cited in claim 11.

15. (Withdrawn) A computer-readable recording medium characterized by recording computer programs cited in claim 12.

16. (Withdrawn) A computer-readable recording medium characterized by recording computer programs cited in claim 13.

17. (Currently Amended) A power supply device having a DC output unit which performs outputting under constant-voltage/constant-current control, comprising:

a constant-current control device which performs a first constant-current control operation for maintaining a first current value and a second constant-current control operation for maintaining a second current value which is larger than the first current value;

a voltage detecting device which detects a voltage drop of the DC output which is caused by a rush current;

a temperature detecting device which detects a temperature of the power supply device;
and

a switching device which switches a constant-current control operation from the first constant-current control operation to the second constant-current control operation when said voltage detecting device detects a voltage drop of the DC output while said constant-current control device performs the first constant-current control operation, and switches a constant-current control operation from the second constant-current control operation to the first constant-current control operation when said temperature detecting device detects that a temperature of the power supply device exceeds a predetermined temperature while said constant-current control device performs the second constant-current control operation.